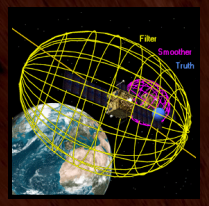
Computer Simulations



Students will be introduced to computer simulations that aid in the exploration of our solar system. In a series of engaging activities, students will learn to use the STK (Satellite Tool Kit) Astrodynamics software, navigate their way around Mars with Google Mars, and watch fascinating computer simulated movies including Entry, Descent and Landing, a flight into Mariner Valley (Mars) and others.

Leadership and Teamwork

The Leadership and Teamwork activities are designed to stimulate the social interaction between students, engage their participation and enhance collaboration skills by learning about the international cooperation between space programs, working as teams, and preparing and presenting a final team project.

Camp Structure

The camp, completely free for students, is nearly two weeks long, starting on June 14, 2010 and ending on June 27, 2010. Students will work in teams of four. Each team will be mentored by a teacher from one of the participating schools.

Hours of the camp are from 8 am to 5pm, Monday through Friday, and take place at NASA Ames Research Center (Mountain View). The field trip to Mt. Lassen will occupy the first weekend (6/18-6/20) . The last weekend will be devoted to rocket launching, the robotics competition, and a final presentation given by students for their parents. A farewell BBQ with parents will cap off the camp.

"I believe it is a life path changing experience. The exposure sparked so many career possibilities for her." –Student Participant's Parent, 2009

Who Should Apply

All students who are interested in participating in the camp should apply. Interests should be directed to the participating teacher liaison, who is in charge of recruiting four students from participating high schools. For more information, contact Vicky Criddle at maria.v.criddle@nasa.gov or go to http://microbes.arc.nasa.gov/STEP

June 2010

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

STEP 2010

A Students' Mission to Mars

Science, Technology And Exploration Program

A Science Summer Camp for High School Students

supported by

NASA Ames Research Center
NASA Science Mission Directorate
Advanced Studies Laboratory
Ames Contractor Council

JUNE 14-27, 2010

SCIENCE TECHNOLOGY & EXPLORATION PROGRAM 2010

What is STEP?

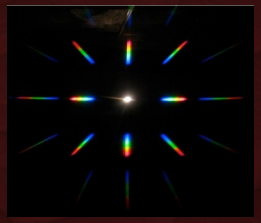
The NASA Science, Technology and Exploration Program (NASA STEP) provides two weeks of informal education, designed to share and inspire the possibilities of space exploration. Leveraging the expertise and infrastructure at the NASA Ames Research Center in Moffett Field, STEP uses the fascinating field of astrobiology to give students and teachers exposure to a diverse range of space-related disciplines and access to current space research and discoveries.

Astrobiology, the study of the origin, evolution and distribution of life in our universe, brings together all aspects of space exploration, science and engineering. It is a multidisciplinary field based on main scientific disciplines—physics, chemistry, biology, geology— and requires the engineering and robotics that enable space exploration. Astrobiology exploration on Earth (often in extreme environments) and beyond involves robotics, advanced technology, and state-of-the-art instrumentation.

NASA STEP consists of a series of science and engineering discovery lectures, hands-on exploration activities and local and virtual field trips. The program, designed around a "mission-building" concept to search for traces of life on Mars, emphasizes collaboration and teamwork, and offers direct interaction with space scientists and engineers. Students will experience what it is like to be involved in groundbreaking investigations and associated fieldwork at NASA's Ames Research Center.

"This program was amazing. It really showed me what I am interested in and what I want to focus on." –Student Participant, 2009

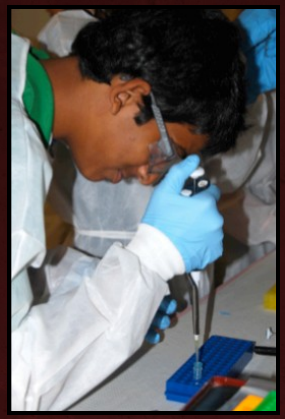
Discovery Lectures



The Discovery Lectures are designed to provide participants with the background information they will need to understand the relevant science and engineering required to engage in the main theme of the camp: a robotic mission to Mars to search for life.

The lectures are given by scientists and engineers who are experts in their fields, and cover a range of topics from astrochemistry and evolutionary biology to rocketry and robotics. Since the program is manageably small, the presentations are highly interactive, offering the best possible introduction to the material.

Hands-On Science Labs



The Hands-On Science Labs introduce students to laboratory work and techniques that are used in the study of life. Examples of the type of activities that are done include a workshop in microbial mats, culturing extremophiles, fundamentals of microscopy, and DNA isolation and protein absorbance.

"The STEP camp showed me that I want to be around NASA as much as possible. I am currently applying for an Ames Associate volunteer position." –Student Participant, 2009

Rocketry and Robotics

Students study the dynamics of flight and challenges of robotics through a series of workshops where they build and fly their own model rockets with payloads systems of their own design, and construct and program robots for a friendly, good-spirited competition.

Field Work: Mt Lassen

An important component of studying life on Earth to understand the limits of adaptation and survival, is field work. Students will travel to Mount Lassen Volcanic National Park for a two-night, three-day adventure where they will see life thriving in boiling mud pots adjacent to snow algae living on ice, explore a cave, and see a unique volcanic landscape reminiscent of Mars.

"I know I really want to go into research." –Student Participant, 2009